

Application No. 10/532,685
AMENDMENT AFTER FINAL REJECTION dated May xx, 2008
Reply to Office Action of February 11, 2008

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended). A carbon nanotube composition that contains a water soluble conducting polymer having an acidic group (a), a water or a water-containing organic solvent (b) and carbon nanotubes (c).

Claim 2 (Withdrawn). A carbon nanotube composition that contains a heterocyclic compound trimer (i), a solvent (b) and carbon nanotubes (c).

Claim 3 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the carbon nanotube composition additionally contains a high molecular weight compound (d).

Claim 4 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the carbon nanotube composition additionally contains a basic compound (e).

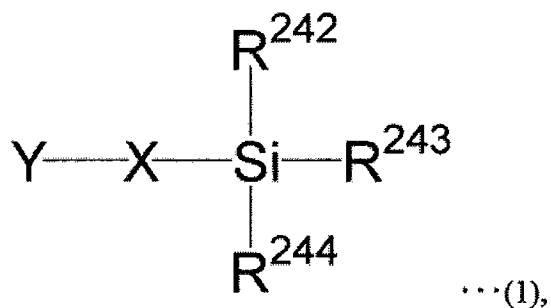
Claim 5 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the carbon nanotube composition additionally contains a surfactant (f).

Claim 6 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the carbon nanotube composition additionally contains a silane coupling agent (g) represented by the following formula (1):

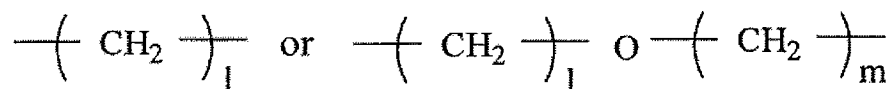
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wherein in the formula (1) R^{242} , R^{243} and R^{244} respectively and independently represent a group selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 6 carbon atoms, linear or branched alkoxy group having 1 to 6 carbon atoms, amino group, acetyl group, phenyl group and halogen group, X represents the following:



l and m represent values from 0 to 6, and Y represents a group selected from the group consisting of a hydroxyl group, thiol group, amino group, epoxy group and epoxycyclohexyl group.

Claim 7 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the carbon nanotube composition additionally contains a colloidal silica (h).

Claim 8 (Canceled).

Claim 9 (Previously Presented). A carbon nanotube composition according to claim 1, wherein the water soluble conducting polymer has at least one of a sulfonic acid group and a carboxyl group.

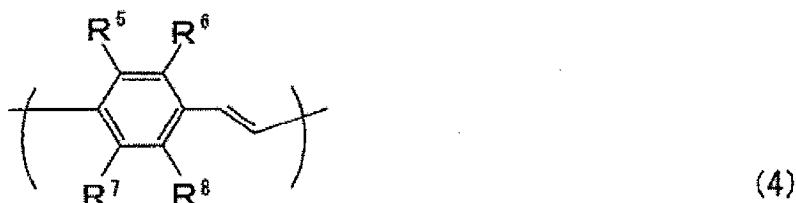
Claim 10 (Previously Presented). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is a water soluble conducting polymer that contains 20 to 100% of at least one type of the repeating units selected from the following formulas (2) to (10) relative to the total number of repeating units throughout the entire polymer:



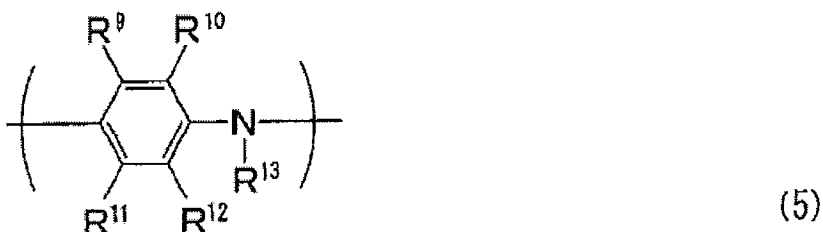
wherein in the formula (2) R¹ and R² are respectively and independently selected from the group consisting of H, -SO₃⁻, -SO₃H, -R³⁵SO₃⁻, -R³⁵SO₃H, -OCH₃, -CH₃, -C₂H₅, -F, -Cl, -Br, -I, -N(R³⁵)₂, -NHCOR³⁵, -OH, -O⁻, -SR³⁵, -OR³⁵, -OCOR³⁵, -NO₂, -COOH, -R³⁵COOH, -COOR³⁵, -COR³⁵, -CHO and -CN, where R³⁵ represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R¹ and R² is a group selected from the group consisting of -SO₃⁻, -SO₃H, -R³⁵SO₃⁻, -R³⁵SO₃H, -COOH and -R³⁵COOH;



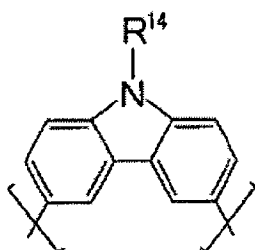
wherein in the formula (3) R³ and R⁴ are respectively and independently selected from the group consisting of H, -SO₃⁻, -SO₃H, -R³⁵SO₃⁻, -R³⁵SO₃H, -OCH₃, -CH₃, -C₂H₅, -F, -Cl, -Br, -N(R³⁵)₂, -NHCOR³⁵, -OH, -O⁻, -SR³⁵, -OR³⁵, -OCOR³⁵, -NO₂, -COOH, -R³⁵COOH, -COOR³⁵, -COR³⁵, -CHO and -CN, where R³⁵ represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R³ and R⁴ is a group selected from the group consisting of -SO₃⁻, -SO₃H, -R³⁵SO₃⁻, -R³⁵SO₃H, -COOH and -R³⁵COOH;



wherein in the formula (4) R^5 to R^8 are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R^5 to R^8 is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$;

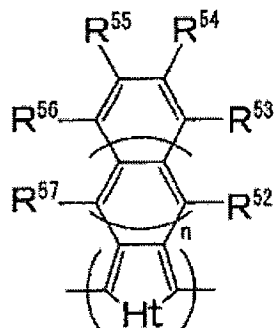


wherein in the formula (5) R^9 to R^{13} are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R^9 to R^{13} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$;



(6)

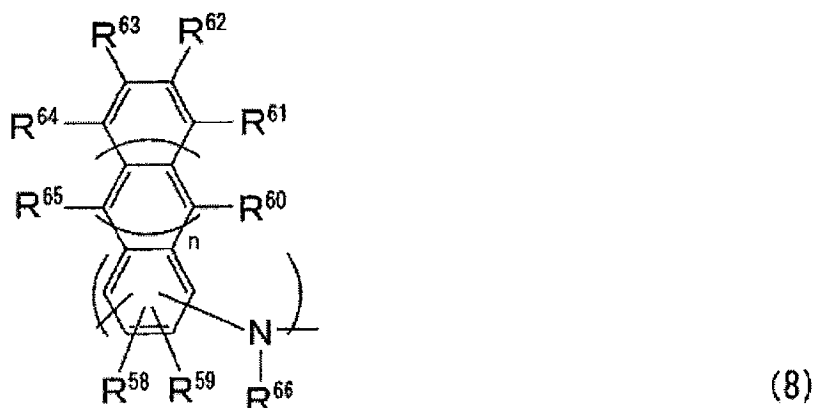
wherein in the formula (6) R^{14} is selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{42}\text{SO}_3^-$, $-\text{R}^{42}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{42}\text{COOH}$, where R^{42} represents an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms;



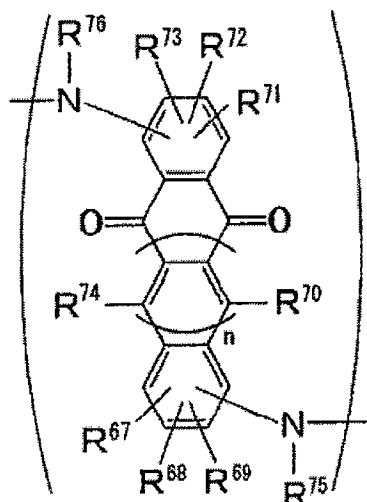
(7)

wherein in the formula (7) R^{52} to R^{57} are respectively and independently selected from the group consisting of H , $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, at least one of R^{52} to R^{57} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$, Ht represents a heteroatom group selected from the group consisting of NR^{82} , S , O , Se and Te , where R^{82} represents hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, or a substituted or non-substituted aryl group having 1 to 24 carbon atoms, the hydrocarbon chains of R^{52} to R^{57} mutually bond at arbitrary locations and may form a bivalent chain that forms at least one cyclic structure of saturated or unsaturated

hydrocarbons of a 3 to 7-member ring together with the carbon atoms substituted by the groups, the cyclic bonded chain formed in this manner may contain a carbonyl ether, ester, amide, sulfide, sulfinyl, sulfonyl or imino bond at arbitrary locations, and n represents the number of condensed rings sandwiched between a hetero ring and a benzene ring having substituents R^{53} to R^{56} , and is 0 or an integer of 1 to 3;

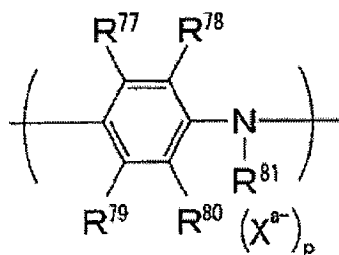


wherein in the formula (8) R^{58} to R^{66} are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, at least one of R^{58} to R^{66} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$, and n represents the number of condensed rings sandwiched between a benzene ring having substituents R^{58} and R^{59} and a benzene ring having substituents R^{61} to R^{64} , and is 0 or an integer of 1 to 3;



(9)

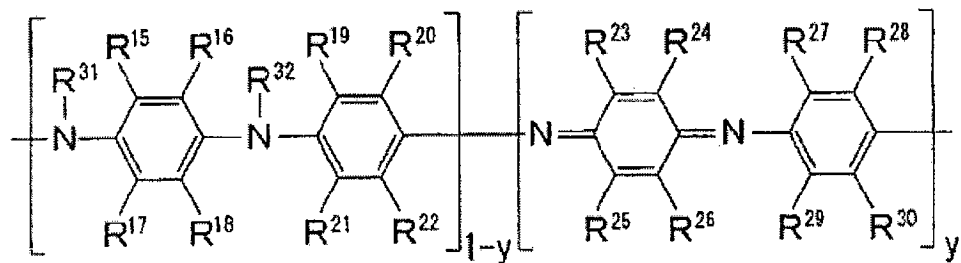
wherein in the formula (9) R^{67} to R^{76} are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, at least one of R^{67} to R^{76} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$, and n represents the number of condensed rings sandwiched between a benzene ring having substituents R^{67} to R^{69} and a benzoquinone ring, and is 0 or an integer of 1 to 3; and,



(10)

wherein in the formula (10) R^{77} to R^{81} are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group or alkylene, arylene having 1 to 24 carbon atoms or an aralkylene group having 1 to 24 carbon atoms, at least one of R^{77} to R^{81} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$, Xa^- is at least one type of anion selected from the group of anions having a valence of 1 to 3 consisting of a chlorine ion, bromine ion, iodine ion, fluorine ion, nitrate ion, sulfate ion, hydrogensulfate ion, phosphate ion, borofluoride ion, perchlorate ion, thiocyanate ion, acetate ion, propionate ion, methane sulfonate ion, p-toluene sulfonate ion, trifluoroacetate ion and trifluoromethane sulfonate ion, a represents the ion valence of X and is an integer of 1 to 3, and p represents the doping ratio and has a value of 0.001 to 1.

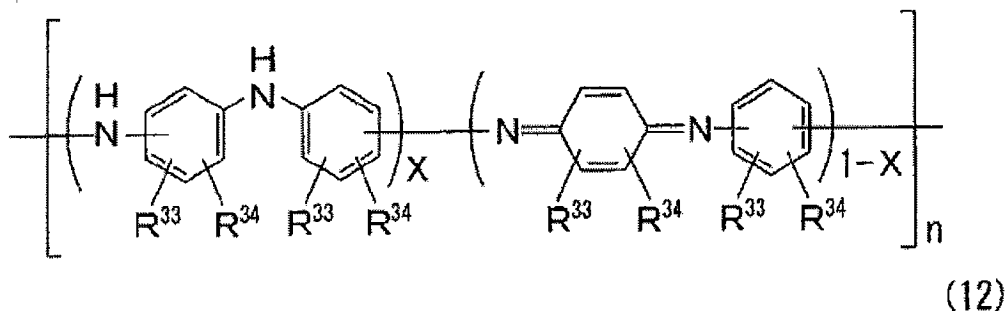
Claim 11 (Withdrawn). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is a water soluble conducting polymer that contains 20 to 100% of the repeating unit represented by the following formula (11) relative to the total number of repeating units throughout the entire polymer:



(11)

wherein in the formula (11) y represents an arbitrary number such that $0 < y < 1$, R^{15} to R^{32} are respectively and independently selected from the group consisting of H , $-SO_3^-$, $-SO_3H$, $-R^{35}SO_3^-$, $-R^{35}SO_3H$, $-OCH_3$, $-CH_3$, $-C_2H_5$, $-F$, $-Cl$, $-Br$, $-I$, $-N(R^{35})_2$, $-NHCOR^{35}$, $-OH$, $-O^-$, $-SR^{35}$, $-OR^{35}$, $-OCOR^{35}$, $-NO_2$, $-COOH$, $-R^{35}COOH$, $-COOR^{35}$, $-COR^{35}$, $-CHO$ and $-CN$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R^{15} to R^{32} is a group selected from the group consisting of $-SO_3^-$, $-SO_3H$, $-R^{35}SO_3^-$, $-R^{35}SO_3H$, $-COOH$ and $-R^{35}COOH$.

Claim 12 (Withdrawn). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is represented by the following formula (12):



wherein in the formula (12) R^{33} represents one group selected from the group consisting of a sulfonic acid group, carboxyl group, their alkaline metal salts, ammonium salts and substituted ammonium salts, R^{34} represents one group selected from the group consisting of a methyl group, ethyl group, n-propyl group, iso-propyl group, n-butyl group, iso-butyl group, sec-butyl group, tert-butyl group, dodecyl group, tetracosyl group, methoxy group, ethoxy group, n-propoxy group, iso-butoxy group, sec-butoxy group, tert-butoxy group, heptoxy group, hexoxy group, octoxy group, dodecoxy group, tetracoxy group, fluoro group, chloro

group and bromo group, X represents an arbitrary number such that $0 < X < 1$, and n represents the degree of polymerization and has a value of 3 or more.

Claim 13 (Withdrawn). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is a water soluble conducting polymer obtained by polymerizing at least one of type of acidic group-substituted aniline represented by the following formula (13), its alkaline metal salt, ammonium salt and substituted ammonium salt, with an oxidizing agent in a solution containing a basic compound:



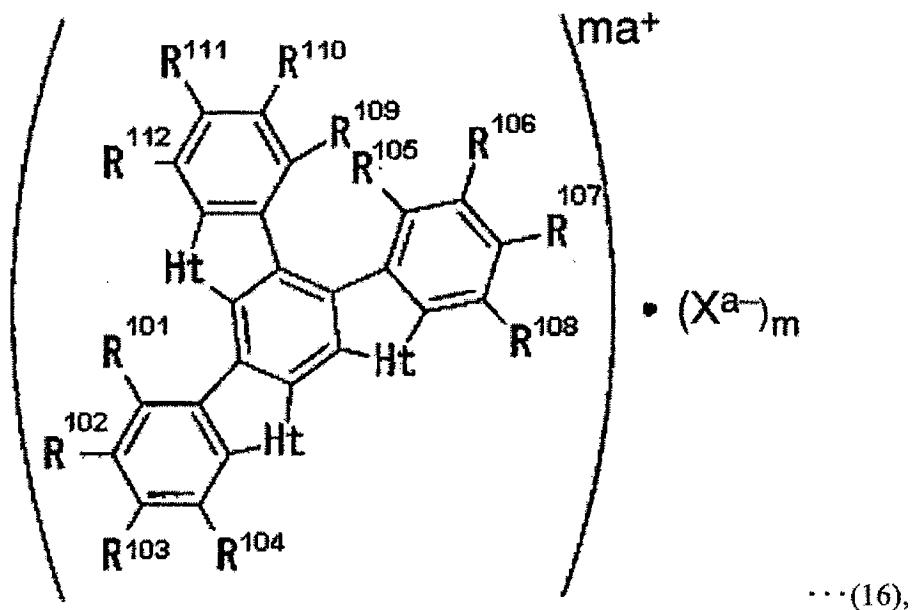
wherein in the formula (13) R^{36} to R^{41} are respectively and independently selected from the group consisting of H, $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{OCH}_3$, $-\text{CH}_3$, $-\text{C}_2\text{H}_5$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, $-\text{N}(\text{R}^{35})_2$, $-\text{NHCOR}^{35}$, $-\text{OH}$, $-\text{O}^-$, $-\text{SR}^{35}$, $-\text{OR}^{35}$, $-\text{OCOR}^{35}$, $-\text{NO}_2$, $-\text{COOH}$, $-\text{R}^{35}\text{COOH}$, $-\text{COOR}^{35}$, $-\text{COR}^{35}$, $-\text{CHO}$ and $-\text{CN}$, where R^{35} represents an alkyl, aryl or aralkyl group having 1 to 24 carbon atoms or an alkylene, arylene or aralkylene group having 1 to 24 carbon atoms, and at least one of R^{36} to R^{41} is a group selected from the group consisting of $-\text{SO}_3^-$, $-\text{SO}_3\text{H}$, $-\text{R}^{35}\text{SO}_3^-$, $-\text{R}^{35}\text{SO}_3\text{H}$, $-\text{COOH}$ and $-\text{R}^{35}\text{COOH}$.

Claim 14 (Original). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is a water soluble conducting polymer obtained by polymerizing at least one type of alkoxy group-substituted aminobenzene sulfonic acid, its alkaline metal salt, ammonium salt

and substituted ammonium salt, with an oxidizing agent in a solution containing a basic compound.

Claim 15 (Withdrawn). A carbon nanotube composition according to claim 9, wherein the water soluble conducting polymer having at least one of a sulfonic acid group and a carboxyl group is polyethylene dioxythiophene polystyrene sulfate.

Claim 16 (Withdrawn). A carbon nanotube composition according to claim 2, wherein the composition contains a heterocyclic compound trimer (i) that is a heterocyclic compound trimer represented by the following formula (16):



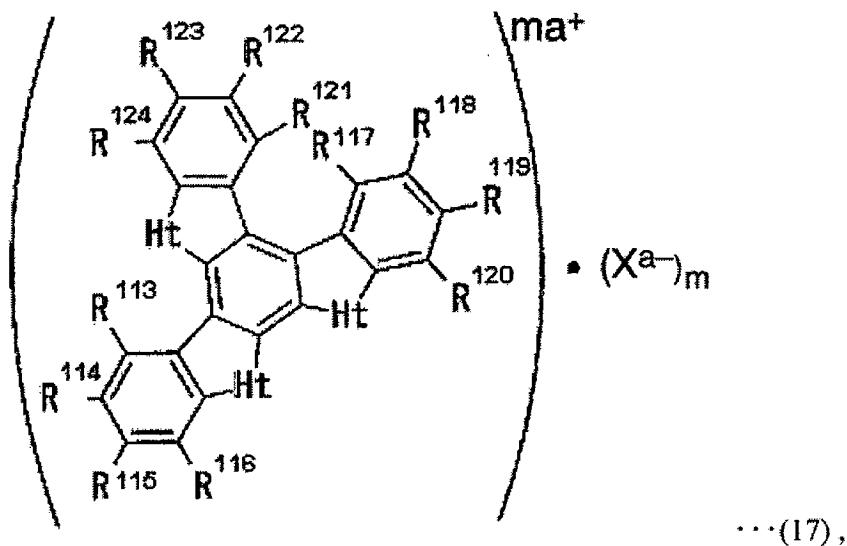
wherein in the formula (16) R^{101} to R^{112} are substituents respectively and independently selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, a linear or branched alkoxy group having 1 to 24 carbon atoms, linear or branched acyl group having 2 to 24 carbon atoms, aldehyde group, carboxyl group, linear or branched carboxylic ester group having 2 to 24 carbon atoms, sulfonic acid group, linear or

branched sulfonic ester group having 1 to 24 carbon atoms, cyano group, hydroxyl group, nitro group, amino group, amido group, dicyanovinyl group, alkyl (linear or branched alkyl group having 1 to 8 carbon atoms) oxycarbonylcyanovinyl group, nitrophenylcyanovinyl group and halogen group;

Ht represents a heteroatom group selected from the group consisting of NR¹⁵⁴, S, O, Se and Te, and R¹⁵⁴ represents a substituent selected from the group consisting of hydrogen and a linear or branched alkyl group having 1 to 24 carbon atoms;

X^{a-} represents at least one type of anion selected from the group consisting of anions having a valence of 1 to 3 consisting of a chlorine ion, bromine ion, iodine ion, fluorine ion, nitrate ion, sulfate ion, hydrogensulfate ion, phosphate ion, borofluoride ion, perchlorate ion, thiocyanate ion, acetate ion, propionate ion, methane sulfonate ion, p-toluene sulfonate ion, trifluoroacetate ion and trifluoromethane sulfonate ion; a represents the ion valence of X and is an integer of 1 to 3; and, m represents the doping ratio and has a value of 0 to 3.0.

Claim 17 (Withdrawn). A carbon nanotube composition according to claim 2, wherein the composition contains a heterocyclic compound trimer (i) that is a heterocyclic compound trimer represented by the following general formula (17):

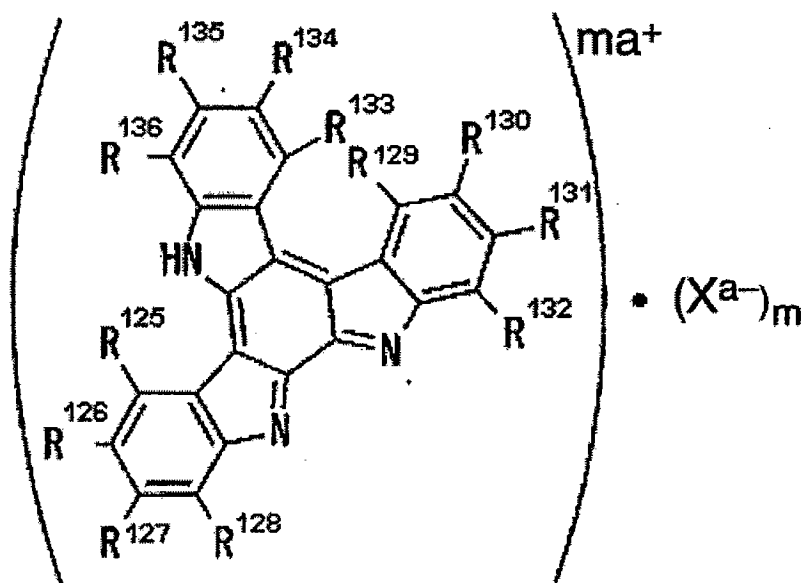


wherein in the formula (17) R^{113} to R^{124} represent substituents respectively and independently selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, linear or branched alkoxy group having 1 to 24 carbon atoms, linear or branched acyl group having 2 to 24 carbon atoms, aldehyde group, carboxyl group, linear or branched carboxylic ester group having 2 to 24 carbon atoms, sulfonic acid group, linear or branched sulfonic ester group having 1 to 24 carbon atoms, cyano group, hydroxyl group, nitro group, amino group, amido group, dicyanovinyl group, alkyl (linear or branched alkyl group having 1 to 8 carbon atoms) oxycarbonylcyanovinyl group, nitrophenylcyanovinyl group and halogen group; at least one of R^{113} to R^{124} is a cyano group, nitro group, amide group, halogen group, sulfonic acid group, and carboxyl group;

Ht represents a heteroatom group selected from the group consisting of NR^{154} , S, O, Se and Te, and R^{154} represents a substituent selected from the group consisting of hydrogen and a linear or branched alkyl group having 1 to 24 carbon atoms;

X^{a-} represents at least one type of anion selected from the group consisting of anions having a valence of 1 to 3 consisting of a chlorine ion, bromine ion, iodine ion, fluorine ion, nitrate ion, sulfate ion, hydrogen sulfate ion, phosphate ion, borofluoride ion, perchlorate ion, thiocyanate ion, acetate ion, propionate ion, methane sulfonate ion, p-toluene sulfonate ion, trifluoroacetate ion and trifluoromethane sulfonate ion; a represents the ion valence of X and is an integer of 1 to 3; and, m represents the doping ratio and has a value of 0 to 3.0.

Claim 18 (Withdrawn). A carbon nanotube composition according to claim 2, wherein the composition contains a heterocyclic compound trimer (i) that is a heterocyclic compound trimer represented by the following general formula (18):

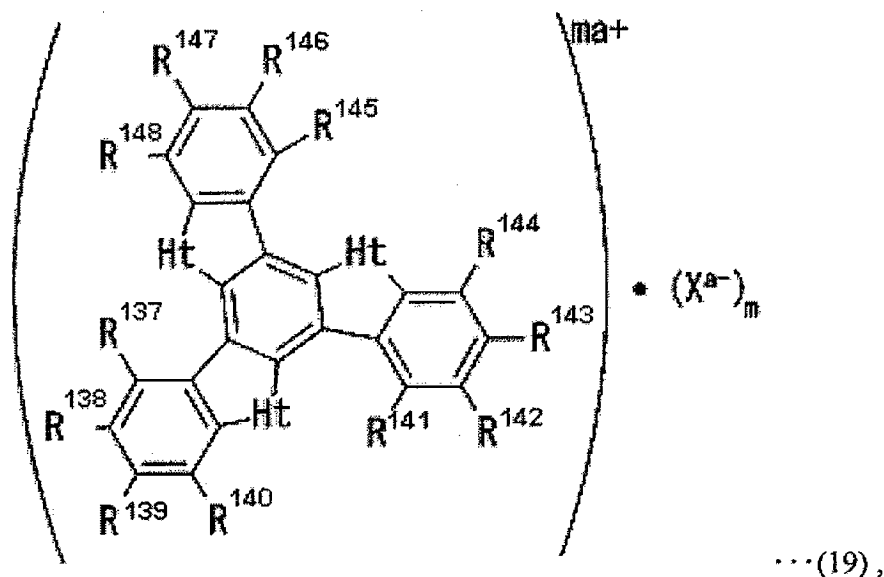


wherein in the formula (18) R^{125} to R^{136} are substituents respectively and independently selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, linear or branched alkoxy group having 1 to 24 carbon atoms, linear or branched acyl group having 2 to 24 carbon atoms, aldehyde group, carboxylic acid group and its alkaline metal salt, ammonium salt and substituted ammonium salt, linear or branched carboxylic ester group having 2 to 24 carbon atoms, sulfonic acid group and its alkaline metal salt, ammonium salt and substituted ammonium salt, linear or branched sulfonic ester group having 1 to 24 carbon atoms, cyano group, hydroxyl group, nitro group, amino group, amido group, dicyanovinyl group, alkyl (linear or branched alkyl group having 1 to 8 carbon atoms) oxycarbonylcyanovinyl group, nitrophenylcyanovinyl group and halogen group;

X^a^- represents at least one type of anion selected from the group consisting of anions having a valence of 1 to 3 consisting of a chlorine ion, bromine ion, iodine ion, fluorine ion, nitrate ion, sulfate ion, hydrogen sulfate ion, phosphate ion, borofluoride ion, perchlorate ion, thiocyanate ion, acetate ion, propionate ion, methane sulfonate ion, p-toluene sulfonate ion,

trifluoroacetate ion and trifluoromethane sulfonate ion; a represents the ion valence of X and is an integer of 1 to 3; and, m represents the doping ratio and has a value of 0 to 3.0.

Claim 19 (Withdrawn). A carbon nanotube composition according to claim 2, wherein the composition contains a heterocyclic compound trimer (i) that is a heterocyclic compound trimer represented by the following general formula (19):

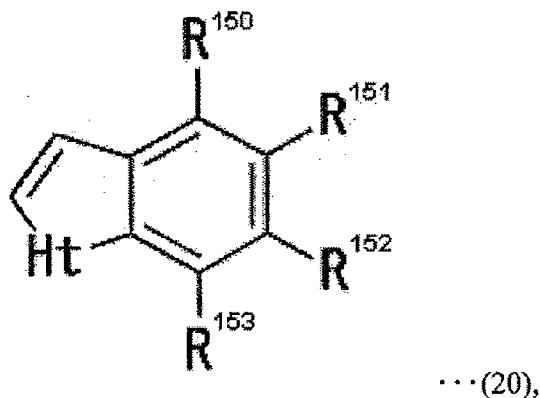


wherein in the formula (19) R^{137} to R^{148} are substituents respectively and independently selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, linear or branched alkoxy group having 1 to 24 carbon atoms, linear or branched acyl group having 2 to 24 carbon atoms, aldehyde group, carboxyl group, linear or branched carboxylic ester group having 2 to 24 carbon atoms, sulfonic acid group, linear or branched sulfonic ester group having 1 to 24 carbon atoms, cyano group, hydroxyl group, nitro group, amino group, amido group, dicyanovinyl group, alkyl (linear or branched alkyl group having 1 to 8 carbon atoms) oxycarbonylcyanovinyl group, nitrophenylcyanovinyl group and halogen group;

Ht represents a heteroatom group selected from the group consisting of NR¹⁵⁴, S, O, Se and Te, and R¹⁵⁴ represents a substituent selected from the group consisting of hydrogen and a linear or branched alkyl group having 1 to 24 carbon atoms;

X^{a-} represents at least one type of anion selected from the group consisting of anions having a valence of 1 to 3 consisting of a chlorine ion, bromine ion, iodine ion, fluorine ion, nitrate ion, sulfate ion, hydrogen sulfate ion, phosphate ion, borofluoride ion, perchlorate ion, thiocyanate ion, acetate ion, propionate ion, methane sulfonate ion, p-toluene sulfonate ion, trifluoroacetate ion and trifluoromethane sulfonate ion; a represents the ion valence of X and is an integer of 1 to 3; and, m represents the doping ratio and has a value of 0 to 3.0.

Claim 20 (Withdrawn). A carbon nanotube composition according to claim 2, wherein the composition contains a heterocyclic compound trimer (i) that is a heterocyclic compound trimer obtained by reacting at least one type of heterocyclic compound represented by the following general formula (20) in a reaction mixture containing at least one type of oxidizing agent and at least one type of solvent:



wherein in the formula (20) R¹⁵⁰ to R¹⁵³ are substituents respectively and independently selected from the group consisting of hydrogen, a linear or branched alkyl group having 1 to 24 carbon atoms, linear or branched alkoxy group having 1 to 24 carbon atoms, linear or branched acyl group having 2 to 24 carbon atoms, aldehyde group, carboxyl group, linear or

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branched carboxylic ester group having 2 to 24 carbon atoms, sulfonic acid group, linear or branched sulfonic ester group having 1 to 24 carbon atoms, cyano group, hydroxyl group, nitro group, amino group, amido group, dicyanovinyl group, alkyl (linear or branched alkyl group having 1 to 8 carbon atoms) oxycarbonylcyanovinyl group, nitrophenylcyanovinyl group and halogen group; and,

Ht represents a heteroatom group selected from the group consisting of NR¹⁵⁴, S, O, Se and Te, and R¹⁵⁴ represents a substituent selected from the group consisting of hydrogen and a linear or branched alkyl group having 1 to 24 carbon atoms.

Claim 21 (Withdrawn). A carbon nanotube composition according to claim 2, wherein said carbon nanotube composition includes a the heterocyclic compound trimer (i) having a layered structure.

Claim 22 (Previously Presented). A production method of a carbon nanotube composition comprising: irradiating a carbon nanotube composition according to claim 1 with ultrasonic waves and mixing.

Claim 23 (Previously Presented). A composite comprising a base material, and a coated film composed of the carbon nanotube composition according to claim 1 on at least one surface of the base material.

Claim 24 (Previously Presented). A method of producing a composite comprising: coating the carbon nanotube composition according to claim 1 onto at least one surface of a base material, and forming a coated film by allowing the coated carbon nanotube to stand at room temperature or subjecting it to heat treatment.

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Claim 25 (Original). A production method of a composite according to claim 24, wherein the heat treatment is carried out within a temperature range of normal temperature to 250°C.